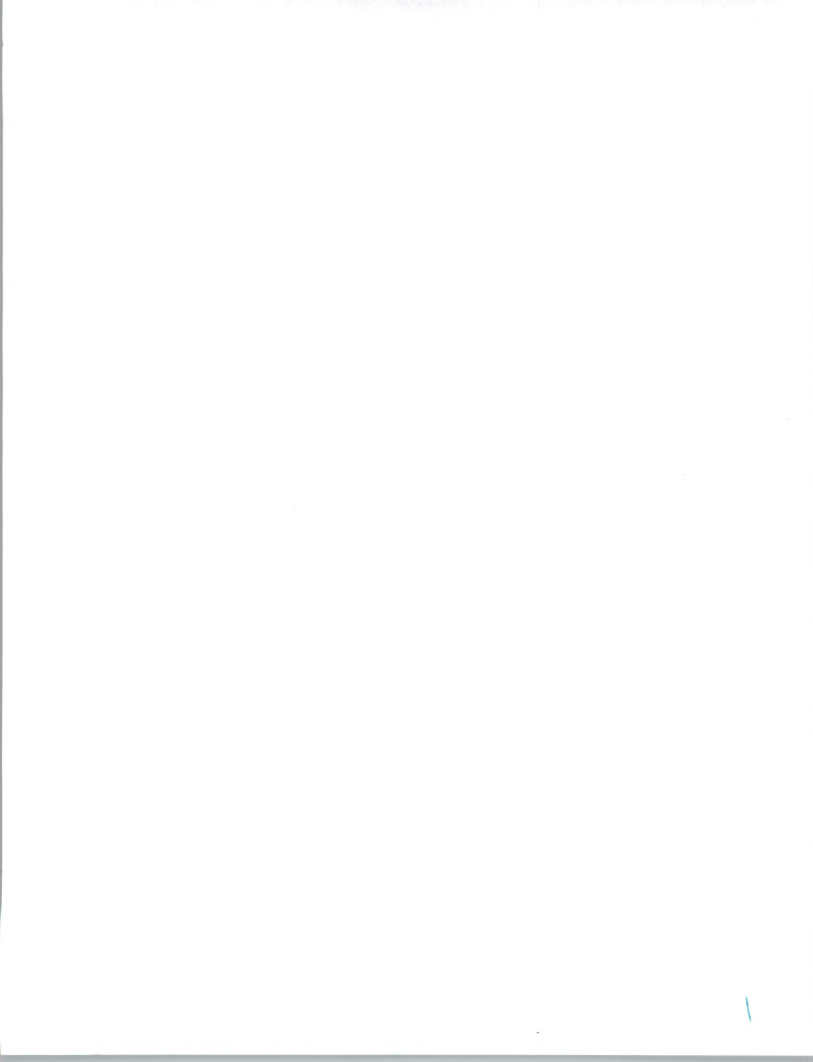


**Systems Integration and
Systems Operation
Markets**

INPUT®

1280 Villa Street, Mountain View, California 94041-1194

(415) 961-3300





Systems Integration and Systems Operation Markets

INPUT

Systems Integration

INPUT

SI Definition

- A business offering
- Complete solution to complex requirement for:
 - Information systems
 - Networking
 - Automation
- Custom selection and implementation of products and services

INPUT

Systems Integration: Globalized Activity

- Gaining overseas acceptance
- Prime contractors need local subcontractor relationships
- Big players with deep pockets and high visibility required
- Leads to systems operations (facilities management) contracts

INPUT

Major Buyer Issues

- Core business focus
- Competitive demands
- Increasingly complex solutions

INPUT

Major Buyer Issues

- Users becoming buyers
- New technology application
- Unavailable skills

INPUT

Major Vendor Issues

- Consolidations and alliances
- Focus on repeatable solutions
 - Risk reduction
 - Productivity

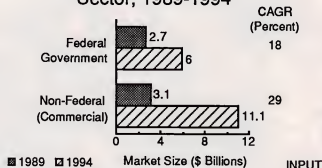
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Major Vendor Issues

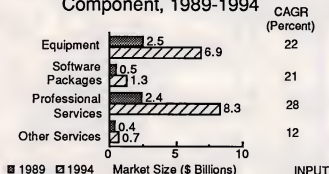
- Full service suppliers
 - "Business change" consulting
 - Systems operation
- Increasing competition
 - Skills
 - Clients

INPUT

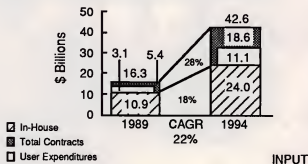
U.S. Systems Integration Market by Sector, 1989-1994



U.S. Systems Integration Market by Component, 1989-1994



Commercial Systems Integration Project Value and Expenditures, 1989-1994

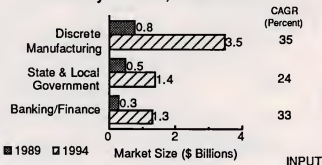


Key Commercial SI Market Factors

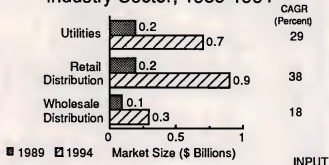
- Rising demand for connectivity
- Major infrastructure rebuilding
- Growing user management trend
- Growing application complexity

INPUT

U.S. Systems Integration Market by Industry Sector, 1989-1994



U.S. Systems Integration Market by Industry Sector, 1989-1994



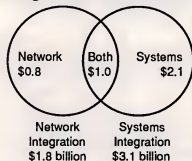
Cross-Industry Market Distribution, 1989

Cross-Industry	\$ Millions	
	Total Value	Average Award
Office	490	6.5
Engineering/Science	428	33.0
Automation	280	13.5
Accounting	208	5.2
Others	140	3.4

INPUT SI Data Base

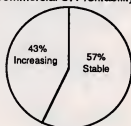
INPUT

Non-Federal Network/Systems Integration Market, 1989



Trends in SI Profitability

Commercial SI Profitability



Federal SI Profitability



INPUT

Vendor Selection Criteria

Type	Percent of Respondents
Support skills	64
Service orientation	50
On-site visits	43
References	43
Alliances	21

INPUT

SI Vendor Capabilities Needed

Ranking	Capability
1	Program management
2	System design/architecture
3	Business consulting
4	Software development

Ranked by vendors

INPUT

SI Vendor Capabilities Needed

Ranking	Capability
5	Vertical industry knowledge
6	Facilities management and operations skills
7	Software products
8	Hardware products

Ranked by vendors

INPUT

Buyer Acceptance Methodologies

Type	Percent of Respondents
Performance criteria	40
Functionality definition	26
Simulation	13
Prototype/parallel processing/unknown	7 (each)

INPUT

Market Share by Competition Class, Mid-1989

Vendor Class	Percent of Market		
	Federal	Commercial	Overall
Hardware manufacturers	21	24	23
Communication vendors	6	12	9
Professional services	50	30	40
"Big 6"	4	12	8
Aerospace	15	9	12
Other	4	13	8

INPUT

SI Competition Ranked by Vendors

- Commercial
 - Andersen Consulting
 - EDS
 - IBM
 - DEC

By Number of Mentions

INPUT

SI Competition Ranked by Vendors

- Federal
 - CSC
 - EDS
 - IBM
 - BCS, PRC (tied)
 - TRW, MMDS (tied)

By Number of Mentions

INPUT

Future Trends

- New domestic and off-shore competitors as primary and secondary vendors
- Increased centralization of vendor SI "product" management
- Increased development of program management methods

INPUT

Future Trends

- Growing marketing/promotion investment
- Formal market strategy development by non-SI vendors
- Telecommunications and engineering companies

INPUT

Conclusions

- Financial characteristics
 - Rapid revenue growth
 - Commercial profits—stable/increasing
 - Federal profits—stable/decreasing

INPUT

Conclusions

- SI market strategies
 - Vertical market penetration
 - Full service emphasis
 - Fewer cross-industry markets
 - User business sensitivity
 - Less emphasis on alliances

INPUT

Conclusions

- Buyer Emphasis
 - Users becoming buyers
 - Interest in solutions, not technology
 - Preference for industry knowledge
 - Project management key
 - Acceptance by performance

INPUT

Vendor Recommendations

- Develop/expand business consulting skills
- Involve program managers in business acquisitions
- Use repeatable processes, strive for end-to-end methodologies

INPUT

Systems Operations

INPUT

Systems Operations Definition

Operation of all or a major portion of a customer's information systems function on a long-term (more than one year) contract.

INPUT

"Old"
Facilities Management

- Focus on computer operations

"New"
Systems Operations

- Development, planning, control, operations

INPUT

Systems Operations Characteristics

- Method of Operation
 - Remote
 - On-site
 - Distributed

INPUT

Characteristics of Types of
Systems Operations

Location of Main Computer	Ownership of Main Computer	
	Vendor	Customer
Vendor Site	Processing Services	Professional Services
Customer Site	Processing Services	Professional Services

☐ Dominant modes

INPUT

Characteristics of Types of
Systems Operations

Location of Main Computer	Dedication of Main Computer	
	Shared	Single Customer
Vendor Site	Processing Services	Processing Services
Customer Site	Professional Services	Professional Services

☐ Dominant modes

INPUT

1-3

12

Characteristics of Types of Systems Operations

Application Provider	Type of Systems Operation	
	Platform	Application
Customer	X	
Systems Operation Vendor		X
Third-Party	X	(X)

○ New mode of partnership

INPUT

System Operations Characteristics

- Ownership of central systems
 - Vendor-owned
 - Customer-owned

INPUT

Systems Operations Characteristics

- Uniqueness of resource use
 - Single customer, dedicated resources
 - Multiple customers, shared resources

INPUT

Systems Operations Processing Services

- Fastest-growing segment of processing market
- Changing attitudes of IS executives
- Non-IS executive involvement
- Emerging systems vendors' strategies

INPUT

Systems Operations Driving Forces

- Increasing complexity of operations
- Scarcity and expense of required talents
- Costs and problems of systems upgrades
- Service level requirements
- Backup requirements

INPUT

Systems Operations Driving Forces

- Systems integration creates opportunities
- Reduction of costs through sharing
 - People
 - Software
 - Computer systems
 - Networks

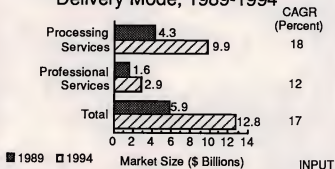
INPUT

Systems Operations and Competitive Advantage

- Operations advantages hard to achieve
- Avoidance of operations disadvantages imperative
- Advantage/disadvantage comes from applications

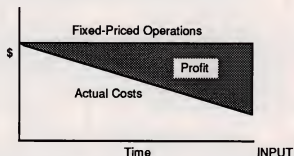
INPUT

U.S. Systems Operations Market by Delivery Mode, 1989-1994

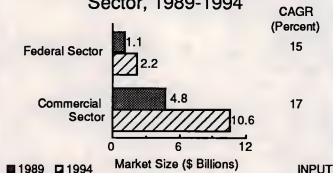


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Systems Operations Efficiency Yields Profits



U.S. Systems Operations Market by Sector, 1989-1994

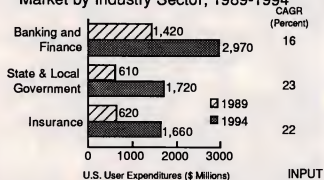


Trends in Systems Operations

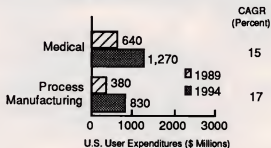
- Network management contracts
- Development and operations in agreements
- Shared resources approach
- Mixed hardware offerings
- Vertical market focus

INPUT

Processing Services Systems Operations Market by Industry Sector, 1989-1994



Processing Services Systems Operations Market by Industry Sector, 1989-1994



INPUT

Industry Margins Vendors' View

	Profit Margins (Percent)
Commercial	15
Federal	9

INPUT

Vendor Strategies

- Systems integration projects lead to SO opportunities
- "Flow-through" creates profit opportunities
 - Add-on equipment
 - Software
 - Supplies

INPUT

Vendor Strategies

- Project managers are critical skills
- Winning vendor hiring of on-board staff
- Focus on equipment inventory management
 - Technology insertion
 - Residual values
- Full-service providers

INPUT

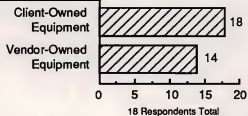
Systems Operations Study

- 20 vendors
- 68 users or potential users
 - 24 current SO users
 - 24 would consider use
 - 20 definite "no's"

INPUT

Service Modes Surveyed Vendors

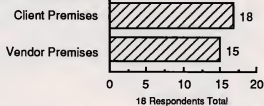
Service Provided On:



INPUT

Service Modes Surveyed Vendors

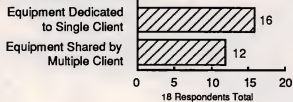
Service Provided On:



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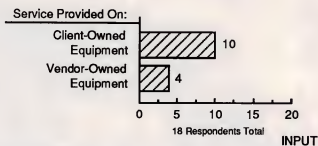
Service Modes Surveyed Vendors

Service Provided On:

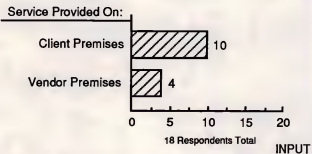


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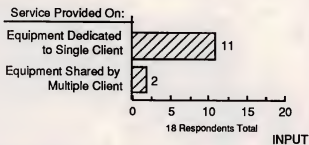
Client Service Preference Vendors' View



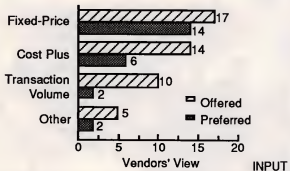
Client Service Preference Vendors' View



Client Service Preference Vendors' View



Systems Operations Vendor Pricing



Systems Operations Firms Other Offering

Capability	Number Offering	High Importance
Systems integration services	19	16
Software development service	19	11
Software maintenance	19	11
Education/Training/Documentation	19	6

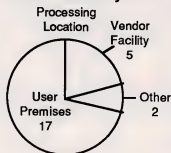
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Systems Operations Users Surveyed



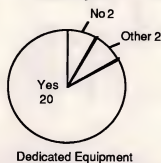
INPUT

Systems Operations Users Surveyed



INPUT

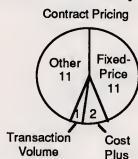
Systems Operations Users Surveyed



Dedicated Equipment

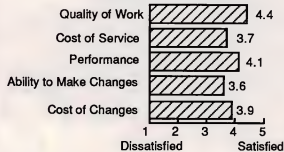
INPUT

Systems Operations Users Surveyed



INPUT

User Satisfaction with SO Vendor Performance



INPUT

Systems Operations Buyers' Initial Evaluation Criteria

Ranking	Criteria
1	Better or more-flexible service
2	Availability of operations skills internally
3	Lower operating expenses
4	Faster application changes
5	Data security/privacy
6	Faster new application development

INPUT

Systems Operations Buyers' Initial Evaluation Criteria

Ranking	Criteria
7	Ability to add/delete personnel
8	Reduced capital investment requirements
9	Mission-critical application
10	Near-term cash flow improvements
11	Labor relations/unions
12	Executive time commitment

INPUT

Systems Operations Vendor Selection Criteria—Buyers' View

Ranking	Criteria
1	Vendor SO experience
2	Overall cost
3	Data security and protection
4	SO performed by prime SI contractor
5	Vendor-provided hardware and systems software maintenance
6	Application software maintenance

INPUT

Systems Operations Vendor Selection Criteria—Buyers' View

Ranking	Criteria
7	Reduced capital investment
8	Near-term cash flow improvements
9	SO performed in client facility
10	Labor relations/unions
11	SO performed in vendor location

INPUT

Leading Systems Operations Vendors

Vendor	Market Share (Percent)
EDS	16 *
Computer Sciences	5
Shared Medical Systems	3
Boeing Computer Services	3
Systematics	3

*Non-GM

INPUT

Systems Operations Targets

• Industry Markets

- Volatile, rapidly changing environment
e.g. semiconductor manufacturing, construction
- Strong cost pressures and systems needs
- Restructuring, e.g. advertising

INPUT

Systems Operations Targets

- Prospect Companies
 - Expanding multinationals, particularly aggressive acquirers
 - Troubled companies, going through turnaround
 - Very fast-growing companies
 - Companies undergoing major organizational changes, e.g. LBOs, divestiture

INPUT

Systems Operations Targets

- Prospect Companies
 - Companies wanting to change basic IS architecture (e.g. Honeywell to IBM)
 - Companies with disparate, incompatible computer centers

INPUT

Systems Operations Targets

- Companies with major development contracts with professional services companies without operational capability
- Generally medium/large companies for domestic U.S. services and large/very large for international services

INPUT

Who is the SO Buyer?

- Varies greatly—dependent on prospect
- Individual more than team
- Customized marketing required

INPUT

What is the SO Buyer Looking For?

- Depends on the prospect
- Requires customized marketing

INPUT

What are the SO Buyer's Key Motivators?

- Most often, solving a problem
- Reducing risk and time often important
- Scarcity of people

INPUT

Essential SO Service Requirements

- Computer, communications, software and people package
- Complete, up-to-date operation using accepted standards
- Varied, detailed support requirements
- Simple, accurate billing

INPUT

SO Terms Characteristics

- Resource use pricing difficult
- Price-packaging required
- Flexible period of contract
- Charge for value-added support
- Customized contracts

INPUT

"Computer Utility" Market

- Small market for supercomputer computation services
- Small, transient market for compute capability only
- All markets require other value-added parameters
 - Operational, "computer-utility"
 - Applications, FM/SO

INPUT

Therefore Do Not Use the Term "Computer Utility"

- "Systems utility"
- "Support services"
- "Operations support" (IBM term)
- "Systems operational services" (SOS!)
- "Computer operation services"

INPUT

Platform Systems Operations = Computer/Systems Utility

INPUT

Platform Systems Operations

Prospect View of System
Utility Relationship

- "Technology" rather than "application" solution
- View could be:
 - Short-term, solve a problem
 - Long-term, provide basic architecture

INPUT

Prospect View of System Utility Relationship

- Account control will vary
 - Strong for technology
 - Medium to weak for applications
 - Varied for people
- Competition for other IT services will be strongly affected

INPUT

Prospect View of System Utility Relationship

- Should become stronger over time
- Opportunity for service expansion

INPUT

Systems Utility Partnering Opportunity

- Could be key motivator
 - Compute utility/operational capability
 - Vendor application/industry capability

INPUT

Impact on Existing Markets

- "Traditional" FM/SO markets could be attacked by combination of:
 - Systems utility
 - Application/industry specialist software/service

INPUT

"Systems Utility" Market Potential

- Vast, unmeasurable
- Replaces in-house data/network centers
- Attractive features:
 - Avoids equipment upgrade/choices
 - Avoids software (operating systems/DBMS/communications) upgrade/operations problems
 - Avoids systems staffing needs and problems
 - Avoids maintenance problems

INPUT

"Systems Utility" Market Potential

- Increasingly data/network centers are 'operatorless'
- Can be moved, taken over without users noticing
- INPUT always considered major opportunity

INPUT

"Systems Utility" Market Potential

- Questions
 - To what extent will IBM impact its own business?
 - Can anyone else impact the market as well?

INPUT

"Systems Utility" Market Potential

- Issues to be addressed:
 - Ownership
 - Control
 - Security
 - Competitiveness
 - People

INPUT

Conclusions

- Renewed acceptance of systems operations
- Market entry by large vendors
- Track record is important
- Systems integration will provide systems operations growth impetus

INPUT

Conclusions

- Economic factors will continue to create user demand for systems operations
- Commercial sector is most attractive
- Profits through productivity and technology leverage

INPUT

Recommendations

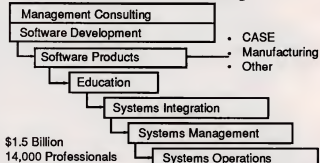
- Include systems operations and systems integration in business strategies
- Focus on full service offerings
- Target organizations experiencing change
- Leverage skills and resources

INPUT

Competitive Trends

INPUT

Andersen Consulting



INPUT

Computer Sciences Corp/Infonet

- Continues strong in federal markets
 - Primarily professional services/SI
- Resurgent interest in commercial markets
 - Health and insurance
 - Tax and credit
 - Professional services/SI

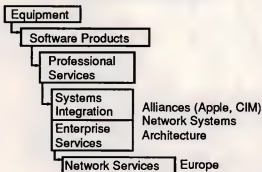
INPUT

Computer Sciences Corp/Infonet

- Acquisitions key to commercial activities
 - Index
 - Computer Partners

INPUT

Digital Equipment



INPUT

EDS

- Industry leader in systems operations
- Aiming for very large accounts
- Industry-oriented
 - Finance
 - Insurance
 - State and local government
 - Banking

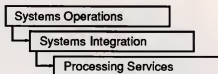
INPUT

EDS

- Broad range of systems: IBM, DEC, HP
- Ownership position in HDS
- Strong network capability
- Global

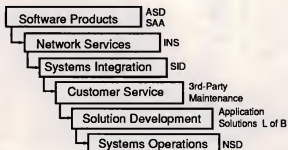
INPUT

EDS



INPUT

IBM



INPUT

IBM

- Fundamental changes
- 1. Sales incentives for services
- 2. Willingness to provide systems operations services

INPUT

IBM National Services Division

- Will provide systems operations for customers
- 30,000 people
- Works with IBM's SID and INS operations

INPUT

IBM National Services Division

- Provides all "operations support" functions
 - Data center design and building
 - Remote, "Lights-out" data center operations
 - Hardware/software/network maintenance
 - Disaster recovery
 - End-user software support
 - Systems operations studies
 - Conversion services

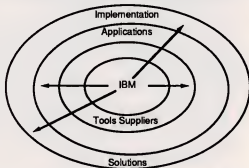
INPUT

IBM Investments in Software/Services Firms

- Worldwide scope
 - 19 in U.S.
 - 24 in Europe
 - 20 in Far East
- Leverage for IBM greater than percent of equity indicates
- Investments will continue

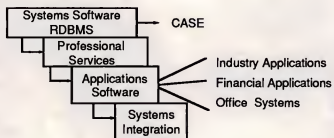
INPUT

IBM Investment Strategy



INPUT

Oracle



INPUT

Aerospace Subsidiaries

- Tried the "Computer Utility" route
- Have enjoyed limited success
- Successes
 1. Government
 - BCS
 - Gruman
 - MMDS
 2. Specialized areas
 - TRW

INPUT

Aerospace Companies

- Litton Computer Services
- Provides "computer utility" processing services
 - \$30M revenues
 - "Packaged" pricing
 - Emphasis in Los Angeles

INPUT

European Companies

- Hoskyns:
 - Very successful in FM
 - Good "computer utility" model
 - Avoided industry specialization
- Thorn-EMI
 - Also successful in processing utility
- SD-Scicon, GSI, Sema-Cap, others
- PTTs becoming more aggressive

INPUT

Japanese Companies

- NT&T Data Services
 - Primary market government
 - SI/Systems operations
- Many VAN companies (500)

INPUT

Summing It Up

- Broadening product strategies
- Emphasis on "solution" niches
- Focus on quality and service

Accomplished through:

- Self-funded expansion
- Consolidation—partnering/acquisitions

INPUT

32.5



About INPUT

INPUT provides planning information, analysis, and recommendations to managers and executives in the information processing industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions.

Continuous-information advisory services, proprietary research/consulting, merger/acquisition assistance, and multiclient studies are provided to users and vendors of information systems and services (software, processing services, turnkey systems, systems integration, professional services, communications, systems/software maintenance and support).

Many of INPUT's professional staff members have more than 20 years' experience in their areas of specialization. Most have held senior management positions in operations, marketing, or planning. This expertise enables INPUT to supply practical solutions to complex business problems.

Formed as a privately held corporation in 1974, INPUT has become a leading international research and consulting firm. Clients include more than 100 of the world's largest and most technically advanced companies.

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